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# **Bank Funding, Securitization and Loan Terms: Evidence from Foreign Currency Lending**

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April 2013

## **Abstract**

We examine how bank funding structure and securitization activities affect the currency denomination of business loans. We analyze a unique dataset that includes information on the *requested* and *granted loan* currency for 99,490 loans granted to 57,464 firms by a Bulgarian bank. Our findings document that foreign currency lending is at least partially driven by bank eagerness to match the currency structure of assets with that of liabilities. Our results also show that loan currency, as well as loan amount and maturity, are adjusted to make loans eligible for securitization.

(90 words)

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# 1 Introduction

Does the asset-liability management of banks lead them to extend loans with unfavorable terms to unsuspecting clients? And does financial innovation – such as the potential to securitize loans – amplify such behavior? In the wake of the financial crisis many commentators have argued that banks may have carelessly or even deceitfully “over-sold” risky credit products to their customers,<sup>1</sup> and that securitization may have played a pivotal role in this behavior.

This paper takes a step in substantiating the above claims by analyzing the striking casus of foreign currency lending in Eastern Europe during the run-up to the financial crisis. Foreign currencies and especially the euro played an important role for domestic financial transactions in Eastern Europe. On average, 52% of loans in the region were granted in foreign currencies and 40% of customer deposits were held in foreign currency with the euro being by far the most important currency (ECB 2007). Recent survey evidence suggests that the propensity of retail clients to take foreign currency loans has not declined even in the aftermath of substantial currency depreciations during the financial crisis (Beckmann, Scheiber and Stix 2011).

The risks arising from foreign currency lending to retail clients, i.e. households and small firms, in countries like Hungary, Poland or Ukraine were widely understood before the crisis,<sup>2</sup> and were met by policy makers with a broad set of regulatory instruments (ECB

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<sup>1</sup> For early examples from the U.S. see *Bloomberg Businessweek* (11/09/2006) and *New York Times* (6/6/2009), and recently the \$85 million civil money penalty against Wells Fargo that was levied partly for “steering potential prime borrowers into more costly subprime loans” (*Federal Reserve Board*, Press Release 20/7/2011).

<sup>2</sup> “The point to grasp about Eastern Europe is that ... the debt is plagued by currency mismatches because in recent years households (and to a lesser extent, corporates) have increasingly chosen to borrow in low-interest currencies ... it has shades of the Asian tigers back in 1997.” (*Financial Times*, 29/9/2007).

2010). In the aftermath of the crisis policy makers in the region have also taken measures to cushion the impact of exchange rate depreciations on unhedged borrowers (Brown and Lane 2011).

Mirroring the debate over irresponsible lending in the US subprime market, the blame for excessive foreign currency borrowing in Eastern Europe has been laid at the door of the lenders. These have been accused of “pushing” euro loans onto their clients as a result of their substantial funding in euro obtained from their (Western European) parent banks. While recent bank-level evidence questions the role of international funding as a driver of foreign currency lending (Brown and De Haas 2012), recent policy measures e.g. in Hungary, are still based on the premise that the banks are to blame.<sup>3</sup>

In this paper we examine to what extent bank funding structures and securitization activities affect the currency denomination of loans in Bulgaria. Our analysis is based on a unique bank dataset that contains 99,490 business loans granted to 57,464 firms during the period 2003-2007. In contrast to previous studies and crucial for our purposes we observe not only the currency as stated in the loan contract but also the borrower’s *requested* currency. We are therefore able to examine to what extent the currency denomination of loans is driven by supply side factors such as foreign currency funding and securitization.

The bank at the heart of our analysis is focused on retail lending making it an interesting object of study, since especially retail clients have been most involved in foreign currency transactions throughout Eastern Europe. As with the majority of banks in the region, the bank is mainly foreign owned and has substantial funding in foreign currency. Similar to other

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<sup>3</sup> Foreign currency debt relief measures recently implemented by Hungarian authorities include the possibility for borrowers to repay their foreign currency loans early at below market exchange rates. In the first three weeks after the measure was introduced Hungarian banks were estimated to have lost 151 Million US dollars due to this policy (*Bloomberg Businessweek*, 3/11/2011).

retail banks in Bulgaria and the Eastern European region as a whole, loans in foreign currency make up a substantial share (27 percent) of the bank's portfolio.

At a first glance, Bulgaria may seem an odd country to study foreign currency lending, as the country maintains a currency board in which the exchange rate of the local currency (Bulgarian lev) is fixed towards the euro. This currency board held throughout our observation period, so that there was almost no actual exchange rate volatility. However, this by no means implies that firms or banks in Bulgaria were confident that a depreciation of the local currency would not happen. Indeed, Carlson and Valev (2008) report survey evidence suggesting that in 2004 14 percent (25 percent) of Bulgarians believed the currency board might collapse with a sharp devaluation within the next twelve months (five years). An advantage of the currency board, for the purpose of this paper, is that the Bulgarian authorities imposed no limits on open euro foreign exchange positions of banks. Thus we can study the currency composition of bank-lending in an unrestricted policy environment.

We analyze if changes in the currency denomination of the bank's own funding and the potential to securitize loans drives the bank to extend loans in foreign currency although they are requested in local currency. To identify supply-side drivers of foreign currency credit, we rely on an exogenous policy experiment that took place during the sample period. In April 2005 the Bulgarian Government increased reserve requirements to stem a credit boom. The bank reacted by accelerating its existing plans to securitize part of its loan portfolio, but capital market imperfections implied it could only securitize loans denominated in foreign currency, and that were of a certain eligible size and maturity. We compare the switching of loan currency by the bank for eligible and non-eligible loans before and after the initiation of securitization.

We find that almost one-third of the loans disbursed by the bank in foreign currency were initially requested in local currency. Our results show that the bank is more likely to grant a loan in euro if the firm is of lower observable credit risk and if the requested loan is large and long-term. Importantly we find a significant relation between the bank's funding structure, its securitization activities and its propensity to switch loans to foreign currency. The bank is more likely to switch loans to euro when it has more customer funding in euro. The potential to securitize euro-denominated loans from 2006 onwards is also associated with an increased propensity to switch loan currency to euro. We find that only those loans which are eligible for securitization based on their loan amount and maturity are more likely to be switched to euro after the commencement of the securitization deal. Finally, we document that the bank not only switched the currency denomination to make loans eligible for securitization. The bank also increasingly changed the amount and maturity of loans to adhere to the eligibility criteria for securitization. We thus identify securitization as a driver of simultaneous changes in loan currency, amount and maturity.

In sum, our results show that a substantial share of foreign currency retail lending in Eastern Europe may be supply-driven, with banks potentially hesitant to lend long-term in local currency, eager to match the currency structure of their assets and liabilities, and eager to take advantage of the opportunities for securitization.

Our paper aims to contribute to three growing strands of the literature. First, we add to the existing evidence on the determinants of foreign currency borrowing by firms. While the majority of this literature focuses on the choice of foreign versus local currency debt by large

corporates,<sup>4</sup> more recent evidence has also examined loan currency choice by small firms (Brown, Ongena and Yesin 2011) and households (Fidrmuc, Hake and Stix 2013; Beer, Ongena and Peter 2010). In contrast to these studies, our data allows us to disentangle whether the currency denomination of a loan is determined by the clients and/or the bank as we observe both the requested and the granted loan currency.

Second, our paper contributes to a broader literature that links the banks' own funding to granted loan terms and credit availability. Berlin and Mester (1999), for example, tie bank funding to bank orientation, showing that banks with better access to rate-inelastic core deposits engage in more loan rate smoothing (relationship lending) than banks that lack such access. And recently Ivashina and Scharfstein (2010) show that banks with more funding from core deposits reduced their syndicated lending less during the recent financial crisis than banks without access to this stable source of funding.

In our setting the banks' supply of foreign currency loans similarly depends on their own access to foreign currency refinancing (Basso, Calvo-Gonzalez and Jurgilas 2010). Many banks in Emerging Europe have substantial liabilities in euro due to their foreign ownership. At the same time they have limited access to instruments that hedge foreign currency positions due to the weakly developed forward markets. As a consequence, banks may lend in foreign currencies to prevent currency mismatches on their own balance sheets (Luca and Petrova 2008, Sorsa, Bakker, Duenwald, Maechler and Tiffin 2007), especially if they expect

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<sup>4</sup> See Keloharju and Niskanen (2001), Martinez and Werner (2002), Allayannis, Brown and Klapper (2003), Benavente, Johnson and Morande (2003), Cowan, Hansen and Herrera (2005), Kedia and Mozumdar (2003), Gelos (2003), and Cowan (2006) for evidence from various countries.



that they will be bailed out in the case of credit losses due to currency depreciations (Ranciere, Tornell and Vamvakidis 2010).<sup>5</sup>

Third, our work fits in an important nascent literature that investigates the role played by financial innovation, securitization in particular, in the run-up to the current financial crisis. On the one hand, Keys, Seru and Vig (2012) and Keys, Mukherjee, Seru and Vig (2010) show a connection between the ease of securitization and screening in the low documentation subprime market in the U.S. Similarly, Maddaloni and Peydró (2011) find that the softening of lending standards in the U.S. and Europe following low short-term interest rates was amplified by securitization activity, and Kara, Marqués-Ibáñez and Ongena (2011) show that banks in Europe that were more active at originating asset-backed securities were also more aggressive in their loan pricing practices. On the other hand, Benmelech, Dlugosz and Ivashina (2012) for example find that within a Collateralized Loan Obligation (CLO) portfolio only loans that were originated by the bank that acts as the CLO underwriter underperformed the rest of the loan portfolio. Hence securitization *per se* need not lead to softer lending standards.

Our results are similarly qualified. Securitization, on the one hand, seemingly incentivizes the bank to switch borrowers to a foreign currency loan entailing immediate foreign currency risk for the borrower though possibly also indirect future credit risk for the bank. On the other hand, we find that the bank expanded its lending in foreign currency by granting foreign currency loans to the least risky of those clients requesting local currency. Our findings also

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<sup>5</sup> Luca and Petrova (2008) analyze the aggregate share of foreign currency loans for 21 transition countries between 1990 and 2003. They find that it is positively related to aggregate export activity, interest rate differentials, domestic monetary volatility and deposit dollarization, while it is negatively related to the volatility of the exchange rate. Dollarization is lower in countries with more developed foreign exchange markets, and credit dollarization is affected by prudential regulations which stipulate tighter open position limits. See also Arteta (2002), Barajas and Morales (2003), and Basso, Calvo-Gonzalez and Jurgilas (2010).

complement those of Loutskina and Strahan (2009). They show that securitization reduced the influence of bank financial conditions on loan supply in the U.S., i.e. securitization weakened the link from bank funding conditions to credit supply. While the type of securitization that we observe serves to mitigate the effects of macroprudential regulations (and to broaden the refinancing basis), at the same time this securitization also changes the allocation of credit (as in Loutskina 2011) since it leads to more foreign currency denominated loans as well as fewer large and long-term loans.

The rest of the paper is organized as follows. Section 2 describes our data while section 3 reports results from univariate and multivariate analyses. Section 4 concludes.

## **2 Data**

Our dataset covers all annuity loans, credit lines and overdrafts extended to firms by one Bulgarian bank (henceforth called “the Bank”) between April 2003 and September 2007. Bulgaria is representative of the region-wide “euroization” of the banking sector with 47% of loans and 40% of deposits denominated in euro. The Bank is a nationwide bank which focuses on lending to small and medium-sized enterprises. Compared to the aggregate banking system, where only 41percent of assets are loans to enterprises, 70 percent of the assets at the Bank are enterprise loans. As with the majority of banks in Bulgaria and the rest of the region, foreign strategic investors hold a controlling share in the Bank.<sup>6</sup>

In total the Bank extended 106,091 loans during our observation period. For each disbursed loan we have information on the loan terms requested by the firm and the terms

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<sup>6</sup> In 2007 82 percent of bank assets in Bulgaria were in the hands of institutions with majority foreign ownership. In Central and Eastern Europe the average share of foreign bank assets in 2007 was 80 percent.

granted by the Bank. Crucial to our analysis we observe whether the loan was requested and/or granted in Bulgarian lev (henceforth we use the currency's ISO 4217 alphabetic code, i.e. BGN) or in euro (henceforth EUR). We further have information on firm characteristics at the time of the loan disbursement. We exclude all observations with missing loan-level or firm-level data (1,090 observations) and with very large discrepancies between their requested and granted loan amounts (5,511 observations),<sup>7</sup> leaving us with 99,490 loans to 57,464 different firms. We match our loan-level dataset with monthly indicators of the Bank's funding structure (funding source and currency) as well as with indicators of monetary conditions obtained from the Bulgarian National Bank (BNB), the International Monetary Fund (IMF) and Bloomberg. Definitions and summary statistics of all variables are provided in Tables 1 and 2 respectively.

[Insert Tables 1 and 2 here]

## 2.1 The Bank's lending technology and loan portfolio

At the heart of the Bank's lending technology is a personnel-intensive analysis of the borrower's debt capacity.<sup>8</sup> A prospective borrower first meets a client advisor who assesses whether the borrower meets the Bank's basic requirements. If this is the case, the client fills in a loan application form. On this form the client indicates her preferred loan amount, maturity and *currency* as well as the purpose of the loan. The client also has to provide

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<sup>7</sup> We exclude 637 loans with *Requested amount/Amount* > 2 and 4,874 loans with *Requested amount/Amount* < 0.5.

<sup>8</sup> To gain insights into the usual loan granting process, we have conducted informal interviews with loan officers and training staff from the Bank's head office.

information about the firm ownership, other bank relations and the free cash flow available for the repayment of the loan.

In a next step, the Bank's credit administration prepares information on the borrower's credit history with the Bank and other banks.<sup>9</sup> At the same time, the loan officer conducts a financial analysis of the firm including a personal visit to the firm to confirm its financial situation. The loan officer relays his suggested loan terms together with the information gathered during the financial analysis to the Bank's credit committee, which then makes the final decision on the loan terms granted. Since the borrower's repayment capacity is the core figure in the analysis, loan amount, maturity and currency are determined first.

The setting of interest rates and collateral requirements then depends on the loan size. For small loans (up to 50,000 EUR) the collateral requirement and the interest rate on each loan are fixed, i.e. not negotiated on an individual basis (because small loans comprise the bulk of the sample, including collateral and/or the loan rate as control variables is therefore problematic). For medium-sized loans (above 50,000 EUR) collateral requirements and interest rates are negotiated individually.

[Insert Table 3 here]

Table 3 provides an overview of the Bank's lending activities during our observation period. Panel A and B display the number and volume of disbursed loans by year. Most loans in our sample (i.e. 82 percent) are very small, with an amount less than 10,000 EUR, while only 2% of the loans have an amount which exceeds 50,000 EUR. However, considering the

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<sup>9</sup> Enterprise loans in Bulgaria are covered both by the public credit registry and a private credit bureau (see [www.doingbusiness.org](http://www.doingbusiness.org)).

volume of lending, loans exceeding 10,000 EUR (50,000 EUR) make up 67 percent (31 percent) of the Bank's loan portfolio. Mortgage loans make up 9 percent of the number of loans and 45 percent of the volume of loans disbursed by the Bank. A separate analysis of mortgage loans is warranted in our analysis as residential and commercial properties are typically quoted in foreign currency in Bulgaria.

Panel A also shows that almost two-thirds of the Bank's loans are disbursed to *repeat clients*, i.e. borrowers who take out more than one loan during our observation period. The subsample of loans to repeat clients will be important throughout our empirical exercise as it allows us to control for unobserved (time-invariant) firm-level characteristics.

Panel C of Table 3 shows that a substantial share of the Bank's lending is in foreign currency rather than in BGN. Loans denominated in EUR account for 36 percent of the loan volume disbursed during our observation period.<sup>10</sup> This share decreased considerably between 2003 and 2007, but even in this final year of our observation period more than 30 percent of the disbursed loan volume was in EUR. Panel C further reveals that the share of EUR loans increases with loan size and is higher for mortgage loans than for non-mortgage loans.

## **2.2 Requested and granted loan currency**

As we have information on the firms' requested currency as well as the actual currency of the loan granted, we are able to establish when the requested currency coincides with the

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<sup>10</sup> We focus our analysis on foreign currency loans denominated in EUR, since they account for 97.5 percent of the Bank's total foreign currency lending. The remaining share of foreign currency loans are in US Dollar.

granted currency, and how often the Bank switches the loan currency.<sup>11</sup> Figure 1 shows that overall 32 percent of the loans (23 percent of the loan volume) disbursed in EUR were loans initially requested in BGN by the borrower. Looking at it from the borrowers' side, 11 percent of the loan volume which was requested in local currency (61 Mio EUR out of 547 Mio EUR) was actually disbursed in foreign currency. This finding already suggests that a substantial share of foreign currency lending by the Bank is not demand, but supply driven. By contrast, we find that a negligible share of the number and volume of loans disbursed in local currency were requested in foreign currency.

[Insert Figure 1 here]

Figure 2 shows that the propensity of firms to request and the propensity of the Bank to grant EUR loans are strongly related to requested loan size, loan maturity and loan purpose. Figure 2A reveals that the share of loans which is requested in EUR increases with requested loan size and maturity. The figure further shows that mortgage loans are generally more likely to be requested in EUR for any requested size or maturity. As the share of loans requested in EUR is negligible for loans below 10,000 EUR, our main analysis will focus on the subsample of loans with amounts exceeding 10,000 EUR.

[Insert Figure 2 here]

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<sup>11</sup> We cannot observe rejected loan applications. Our study therefore focuses on the determinants of the Bank's switching of successful loan applications between loan currencies.

Figure 2B displays the probability of the Bank granting a EUR loan to a borrower who requested the loan in BGN conditional on its requested loan size, maturity and purpose. The figure shows that the probability of being switched from a BGN to a EUR loan increases with the requested loan size and the requested maturity. The figure also shows that the switching probability is considerably higher for mortgage than for non-mortgage loans.

While Figure 1 and Figure 2 document a high incidence of loan currency switching at the Bank it is likely that we underestimate the true amount of currency switching. First, we only observe applications for those loans which were eventually granted. We therefore do not observe loan applications which were cancelled by the client after the Bank switched the loan currency. Second, and more important, the loan currency requested by the client may be strongly influenced by an “anticipation effect”. For example, a firm which wants to apply for a 5-year mortgage in BGN may be told by the loan officer that such loans are typically given in EUR and may thus fill out the application form accordingly.

Our empirical analysis is focused on two dependent variables. We first examine the probability of firm  $i$  taking out a loan  $k$  at time  $t$  to request a foreign currency as opposed to a domestic currency loan (*EUR requested*). We then examine the probability that the Bank switches loan currency, i.e. grants a loan in EUR that was requested in local currency (*EUR granted* | *BGN requested*).

$$\Pr(\text{EUR requested})_{i,k,t} = \alpha_r + \alpha_s + \beta_1 F_{i,t} + \beta_2 L_k + \beta_3 B_t + \beta_4 M_t + \varepsilon_{i,k,t} \quad (1)$$

$$\Pr(\text{EUR granted} \mid \text{BGN requested})_{i,k,t} = \alpha_r + \alpha_s + \beta_1 F_{i,t} + \beta_2 L_k + \beta_3 B_t + \beta_4 M_t + \varepsilon_{i,k,t} \quad (2)$$

We relate both dependent variables to an array of firm characteristics  $F_{i,t}$ , loan characteristics  $L_k$ , as well as indicators of the Bank’s funding structure  $B_t$  and monetary

conditions  $M_t$  when the loan was disbursed. All empirical models include branch and industry fixed effects  $(\alpha_r, \alpha_s)$  to account for variation in the risks of foreign currency borrowing associated with a firm's economic activity. Branch fixed effects also control for the differences in the magnitude of "anticipation effects" on requested loan currency and loan currency switching between branches if pre-application counseling by loan officers is more intensive for example at smaller branches.

### 2.3 Explanatory variables

We expect those firms to be more likely to request a EUR loan which have foreign currency income, low leverage, and lower distress costs in the case of default. Goswami and Shrikhande (2001) show that firms may use foreign currency debt as a hedging instrument for the exchange rate exposure of their revenues (see Brown (2001) and Mian (1996) on foreign currency hedging). In a model where the uncovered interest rate parity does not hold,<sup>12</sup> and hence the cost of foreign currency debt is lower than the cost of local currency debt, Cowan (2006) shows that firms will be more likely to choose foreign currency debt the higher the interest rate differential, the larger their share of income in foreign currency and the lower their distress costs in case of default. The incentive to take foreign currency loans is weaker when the volatility of the exchange rate is higher, as this increases the default risk on unhedged loans. Brown, Ongena and Yesin (2013) argue that firms with low leverage will be

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<sup>12</sup> See Froot and Thaler (1990) and Isard (2006) for a discussion of the empirical evidence on the uncovered interest rate parity.



more likely to borrow in foreign currency while information asymmetries about a firm's income structure may increase foreign currency loan demand among unhedged firms.<sup>13</sup>

The supply of foreign currency loans by banks should be higher to firms with lower corresponding credit risk, i.e. firms with income in foreign currency, high income to debt ratios and lower distress costs. Following Stiglitz and Weiss (1983) banks may, however, ration foreign currency lending in the face of adverse selection. This could imply that banks supply foreign currency only to clients who are financially transparent and who they know have foreign currency income. Lenders should also be more willing to offer foreign currency loans when they have increased access to foreign currency liabilities in the form of wholesale funds or customer deposits. Basso, Calvo-Gonzalez and Jurgilas (2010) suggest that banks' supply of foreign currency loans will depend on their access to foreign currency debt through financial markets or from parent-banks abroad. Similarly, Luca and Petrova (2008) suggest that increases in banks' access to foreign currency deposits will lead them to offer more foreign currency loans.<sup>14</sup> Low credibility of domestic monetary policy may make banks reluctant to lend in local currency, especially at longer maturities (Levy-Yeyati 2006).

As firm-level indicators of benefits and risks associated with foreign currency borrowing  $F_{i,t}$  we include the variables *EUR savings account* (1=yes, 0=no), *Disposable income* (in log EUR), *Leverage* (in %), *Sole proprietorship* (1=yes, 0=no), *Assets* (in log EUR) and firm *Age* (in log years). We further include the *Loan number* which indicates the number of the loan in

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<sup>13</sup> They show that in the case when lenders are imperfectly informed about the currency or level of firm revenue (Berger and Udell 1998, Brown, Jappelli and Pagano 2009, Detragiache, Tressel and Gupta 2008), local currency earners may be more likely to choose foreign currency loans.

<sup>14</sup> For a discussion of deposit dollarization see De Nicolo, Honohan and Ize (2005).

a sequence of loans that a borrower takes from the Bank as a proxy for information asymmetries between the Bank and the borrower.<sup>15</sup>

With respect to other loan terms we control for the *Requested amount* and *Requested maturity* and whether the loan purpose was to finance real-estate (*Mortgage*).

In our analysis of the Bank's loan currency choice (*EUR granted*) we account for the possibility that the Bank not only may switch the loan currency, but may also adapt the loan size and the loan maturity. The variables *Amount/Requested amount* and *Maturity/Requested maturity* capture the ratio of granted to requested loan size and loan maturity respectively.

As indicators of the Bank's liability structure we employ measures of wholesale and retail funding in foreign currency: *EUR interbank funding* and *EUR customer funding*. Both indicators are measured in % of total liabilities in the month prior to loan disbursement.

We employ four indicators of monetary conditions which should influence the supply of foreign currency loans: *Spread differential*, *Inflation volatility*, *Interest differential* and *Forward term spread*.<sup>16</sup> The *Spread differential* captures the industry-level difference in the intermediation spread on EUR versus BGN funds. We first calculate the intermediation spread for EUR and BGN funds separately using industry-level short-term lending rates minus the household term deposit rates for EUR and BGN funds respectively. The spread differential is then calculated as the difference between the intermediation spread on EUR funds and that on BGN funds. *Inflation volatility* is measured as the variance of monthly changes in the consumer price index (CPI) over the 12 months prior to the quarter in which a

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<sup>15</sup> The *Loan number* also covers loans which are not in our sample, i.e. loans which were disbursed prior to April 2003.

<sup>16</sup> In our estimation of foreign currency loan demand we employ time fixed effects in all specifications to account for monetary conditions.

loan is disbursed. The underlying CPI data is taken from the IMF-International Financial Statistics.

The variables *Interest differential* and *Forward term spread* serve as proxies for the perceived risk of currency depreciation (which may affect credit risk on unhedged foreign currency loans) and the costs to the Bank of hedging long-term (as opposed to short-term) foreign currency positions.<sup>17</sup> We measure the *Interest differential* as the quarterly average of the interbank lending rate (for maturities over 30 days) in BGN minus that in EUR. The *Forward term spread* is the 2-year minus the 3-month rate on over-the-counter BGN/EUR forward contracts taken from Bloomberg. Given the illiquidity of both the Bulgarian interbank market and the long-term forward market for BGN/EUR, both of the above measures provide us only with a rough proxy of changes in exchange rate expectations and the costs of hedging foreign currency risk during our observation period.

### 3 Results

#### 3.1 The impact of firm and loan characteristics on loan currency

##### A. The request for foreign currency loans by firms

Table 4 displays our estimation results for firms' decisions to request foreign currency rather than local currency loans (*EUR requested*). All models presented in the table show

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<sup>17</sup> Bulgaria introduced a currency board in July 1997 which fixed the exchange rate towards the EUR. This currency board held throughout our observation period, so that there was almost no actual exchange rate volatility. However, this by no means implies that firms or banks in Bulgaria were confident that a depreciation of the BGN would not happen. Indeed, Carlson and Valev (2008) report survey evidence suggesting that in 2004 14 percent of the Bulgarians believed the currency board might collapse with a sharp devaluation within the next twelve months. Considering a period of five years more than 25 percent of respondents expected the currency board to collapse with a sharp devaluation. We control for the perceived exchange rate risk with the *Interest differential*.

average marginal effects from logit estimations, include *Industry* and *Branch* fixed effects and control for monetary conditions and the Bank's funding structure with year-quarter fixed effects. The panel estimation for repeat clients (column 6) includes firm-level random effects to account for unobserved firm heterogeneity.<sup>18</sup> Standard errors are presented in brackets and are adjusted for clustering at the industry-branch level in columns (1-5).<sup>19</sup>

[Insert Table 4 here]

Column (1) of Table 4 presents estimates for the full sample, while column (2) presents estimates for the subsample of loans exceeding 10,000 EUR. From a qualitative perspective the two models yield identical results. However, the negligible share of loans requested in foreign currency among the very small loans (below 10,000 EUR) implies that the estimated impact of our explanatory variables is small in the full sample (column 1). To gauge the economic magnitude of our explanatory variables we therefore rely on the estimates for the subsample of loans exceeding 10,000 EUR (column 2). In this sample the average probability to request a EUR loan is 18 percent.

The results presented in columns (2) of Table 4 suggest that the request for a foreign currency loan is positively related to our indicator of foreign currency revenue: Firms which have a *EUR savings account* are 12 percentage points more likely to request foreign currency than firms that do not have a foreign currency savings account. The negative impact of firm-level distress costs is also in line with theoretical predictions. We find that *Sole*

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<sup>18</sup> We use firm random effects rather than fixed effects so as not to exclude the firms which request the same currency for each of their loans.

<sup>19</sup> As a robustness check we re-estimate all regressions adjusting the standard errors for clustering at the time-industry-branch level and find our results qualitatively unchanged.

*proprietorships* are 2.6 percentage points less likely to demand EUR loans than limited liability companies. Further, we find that firms with higher *Leverage* and smaller firms (lower *Assets*) are less likely to demand foreign currency loans. Increasing firm leverage by one standard deviation (0.20) reduces the probability of requesting a foreign currency loan by 0.6 percentage points, while increasing firm size by one standard deviation (440,000 EUR) from the sample mean (206,000 EUR) raises the probability of requesting a foreign currency loan by 4.1 percentage points. We find that firms with larger *Disposable income* are less likely to request a foreign currency loan. This result may point to the fact that liquidity-constrained firms are more likely to choose loans with lower interest expense.

Our results do not support the conjecture that opaqueness in the bank-firm relationship encourages firms to request foreign currency loans. The positive coefficient of *Loan number* suggests that more transparent firms (to the Bank) are more likely to request a foreign currency loan. However, this finding is only of minor economic importance: Our estimates suggest that taking out a further loan increases the probability of requesting a foreign currency loan by a mere 0.8 percentage points.

With respect to loan characteristics we find that *Requested amount*, *Requested maturity* and *Mortgage loan* have a significantly positive impact on the probability to request a foreign currency loan. An increase in the requested amount from 10,000 EUR to 100,000 EUR raises this probability by 22.3 percentage points, while increasing the requested loan maturity from 12 to 60 months by 8.5 percentage points. As expected, the coefficient of *Mortgage loan* is positive and economically sizeable: Mortgage loans are 9.5 percentage points more likely to be requested in foreign currency.

The Table 4 results show that the correlation between foreign currency loan demand and foreign currency income (*EUR savings account*), disposable income, firm size, loan size and

loan maturity is consistently found in the subsample of medium and large loans (column 3), non-mortgage loans (column 4) as well as mortgage loans (column 5). In line with the picture displayed in Figure 2A the economic magnitude of the requested loan size and maturity is larger for mortgage loans than for non-mortgage loans. The panel estimates in column (6) for our subsample of repeat clients confirm that our main findings are not driven by unobserved heterogeneity across firms.

In all models presented in Table 4 we include a full set of *Industry* and *Branch* fixed effects. For brevity the coefficients of these industry and branch intercepts are not presented in the table, but discussed here. Our *Industry* dummies suggest that firms operating in industries that are likely to have foreign currency earnings such as transport, tourism, trade and manufacturing display a larger likelihood to request EUR loans than borrowers from other industries like services or agriculture (the base category). The branch dummies suggest that firms located in the major economic and touristic hubs of the country, e.g. the capital Sofia, the Danube port Ruse or the Black Sea tourist destinations, are more likely to request EUR loans than firms in other areas.

#### *B. The switching of loans from local to foreign currency by banks*

We observe the Bank's currency decision both for those loans which were requested in foreign currency (EUR) and for those which were requested in local currency (BGN). We can therefore examine the Bank's currency choice conditional on the firms' requested currency. As shown in Figure 1, a substantial share of loans which firms request in BGN are switched by the Bank to EUR, while few loans requested in EUR are switched to BGN. Our attention

in Table 5 is therefore focused on those loans which are requested in BGN to identify the drivers behind the Bank's switching of loans to foreign currency (EUR).<sup>20</sup>

Table 5 again presents six models based on our full sample of firms (column 1), loans exceeding 10,000 EUR (column 2), loans exceeding 50,000 EUR (column 3), non-mortgage loans (column 4), mortgage loans (column 5) and loans to repeat clients (column 6). In all models we control for the time-varying funding structure of the Bank and monetary conditions with year-quarter fixed effects. In addition we include a full set of *Industry* and *Branch* fixed effects. Standard errors are presented in brackets and for the cross-sectional regressions are again adjusted for clustering at the branch-region level.

[Insert Table 5 here]

The results presented in Table 5 suggest that the Bank's propensity to switch loans from local currency to foreign currency is negatively related to observable indicators of credit risk. In particular, the Bank is more likely to grant a EUR loan to firms which are not a *Sole proprietorship* and to firms which are larger (*Assets*). Referring to the estimates for loans exceeding 10,000 EUR (column 2), we find that *Sole proprietorships* are 1.1 percentage points less likely to be switched to a foreign currency loan than limited liability firms. Moreover, a one standard-deviation increase in firm *Assets* from the sample mean increases the probability of being switched to a foreign currency loan by 1 percentage points. Neither

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<sup>20</sup> In unreported regressions we examine the Bank's currency choice for those firms which request a loan in EUR but are granted one in BGN. Confirming our results from the main analysis, we find that the Bank is more likely to grant a BGN loan to those clients that display a higher credit risk (fewer *Assets* or a *Sole proprietorship*) and want short-term (*Requested maturity*) or other than *Mortgage loans*.

of these effects is very sizeable given that the average propensity of the Bank to switch loans from local to foreign currency (in the sample of loans exceeding 10,000 EUR) is 10 percent.

The *Requested amount*, the *Requested maturity* and the purpose of the loan (*Mortgage loan*) strongly affect the Bank's currency decision. An increase in the requested amount from 10,000 to 100,000 EUR raises the probability of the Bank switching a loan requested in BGN to EUR by 3.9 percentage points. An increase in the requested loan maturity from 12 to 60 months raises this probability by 1.9 percentage points. The probability that a *Mortgage loan* requested in local currency is switched to foreign currency is 6.5 percentage points higher than for a non-mortgage loan.

The column (3-5) estimates in Table 5 confirm that the correlation between loan currency switching and firm ownership, firm size, requested loan size and requested loan maturity is again robust across the subsample of large and medium loans (> 50,000 EUR), non-mortgage loans and mortgage loans. Moreover, the panel estimates for repeat clients in column (6) confirm that these findings are not driven by unobserved heterogeneity (e.g. in credit risk) across firms.

The Table 5 estimates show that the switching of the loan currency by the Bank is strongly correlated with changes in loan amount and loan maturity. The significantly positive estimates for *Amount/Requested amount* and *Maturity/Requested maturity* show that firms which receive larger and longer-term loans relative to their requests are also more likely to experience a currency switch from BGN to EUR. There are (at least) three potential drivers of the simultaneous changes in loan currency, loan amount, and loan maturity by the Bank. First, the loan terms may be changed on the basis of a mis-assessment of their creditworthiness by loan applicants: If the Bank judges the creditworthiness of an applicant to be higher (lower) than the applicant, the Bank may be more (less) willing to extend larger,



longer-term and foreign currency loans than the applicant anticipated. However, the finding that the coefficients for *Amount/Requested amount* and *Maturity/Requested maturity* are at least as large in our panel estimates (column 6) as they are in our cross-sectional estimates casts doubt on the conjecture that the mis-assessment of their creditworthiness by applicants is mainly responsible for the Bank's changes in loan terms.

Second, the Bank's asset-liability management strategy (e.g. on-balance-sheet hedging of foreign currency and interest rate risk) may induce the credit department to "push" long-term and foreign currency loans to clients. The simultaneous increase in loan amount may result as a consequence of better affordability of long-term and (lower-cost) foreign currency loans. Third, the Bank's hedging of financial risk (currency, interest rate, liquidity or credit risk) through off-balance sheet activities (securitization, loan sales) may only be feasible for loans with a specific currency (EUR), maturity and size. Thus, the Bank may adapt loans' currency, amount and maturity to increase their marketability. In the following two sections we examine to what extent the Bank's switching of loan currency may be explained by on-balance sheet asset-liability management or off-balance sheet activities.

### **3.2 Bank funding and loan currency switching**

In this section we relate the propensity of the Bank to switch loans from BGN to EUR to the Bank's share of wholesale and customer funding in foreign currency (*EUR interbank funding*, *EUR customer funding*). Figure 3 displays the Bank's funding in EUR by quarter over our observation period as well as the share of loans (with amount > 10,000 EUR) switched from BGN to EUR. The share of *EUR interbank funding* in the Bank's total liabilities varies from 12% (2007:Q3) to 33% (2006:Q1), while the share of *EUR customer*

*funding* varies from 4% (2003:Q2) to 24% (2007:Q3). There is no apparent correlation between the share of loans switched from BGN to EUR and the wholesale funding of the Bank in EUR over our entire observation period. In the first half of our observation period there is also no correlation between the customer funding of the Bank in EUR and loan currency switching. From 2006:Q2 onwards we do however see a faster growth of *EUR customer funding* which coincides with a sharp increase in EUR granted.

[Insert Figure 3 here]

In Table 6 we report our regression results for the impact of bank funding on the Bank's decision to grant foreign currency loans. We re-estimate the regressions from columns (2, 4, 5, 6) in Table 5 replacing the year-quarter fixed effects with our bank funding variables and controls for monetary conditions (*Spread differential*, *Inflation volatility*, *Interest differential*, *Forward term spread*). For brevity, we do not report the estimation results for our firm-level and loan-level explanatory variables in the table. The observation period for this analysis starts in June 2004 because data for our control variable *Forward term spread* is only available from then onwards.

The results presented in Table 6 suggest that the Bank is more likely to switch loans from BGN to EUR when its customer liabilities in foreign currency (*EUR customer funding*) are higher, but not when its wholesale funding in EUR is higher. The positive and significant estimate reported in column (1) suggests that going from the lowest to the highest share of *EUR customer funding* increases the likelihood that the Bank switches the loan currency from BGN to EUR by 18 percentage points. By contrast, the reported coefficient for *EUR interbank funding* is insignificant in both statistical and economic terms. These results

confirm the findings of Brown and De Haas (2012) who suggest that the “dollarization” of customer deposits is a strong driver of foreign currency lending in the region.

The column (2-3) estimates show that the correlation between foreign currency customer funding and the switching of loan currency is stronger for mortgage loans than for non-mortgage loans. Thus while asset-liability management considerations may induce the Bank to “push” some clients towards foreign currency loans, it seems that the Bank especially pushes those clients who pose a lower credit risk for the Bank.

[Insert Table 6 here]

With respect to our macroeconomic control variables we find mixed results. The Bank’s decision to switch a loan from BGN to EUR is not systematically related to the differences in the intermediation spread it can earn on the two currencies (*Spread differential*). We find a positive correlation between *Inflation volatility* and loan currency switching for mortgage loans (column 3) as well as in our panel estimates (column 4), but not for non-mortgage loans (column 2) or our full sample (column 1). This result is in line with the reasoning in Ize and Levy-Yeyati (2003) that banks may prefer to make foreign currency loans, especially for longer maturities (mortgages) in countries where the monetary authority has failed to establish a reputation for pursuing price stability.

Our estimates for *Interest differential* suggest that depreciation expectations are positively correlated with the switching of loans to foreign currency, but only for non-mortgage loans. This result is incompatible with a view that the Bank reduces its exchange rate induced credit risk exposure in times of greater exchange rate uncertainty. Our estimates for *Term spread differential* in columns (2-3) suggest that the costs of off-balance-sheet hedging of (long-

term) foreign currency positions are negatively correlated with the currency switching of non-mortgage loans but not of mortgage loans. This result provides some support for the conjecture that the on-balance sheet hedging of short-term vs. long-term foreign currency positions is likely to be affected by the relative cost of short-term vs. long-term off-balance sheet hedging.

The results displayed in Table 6 suggest that foreign currency lending by the Bank is to a significant extent driven by the eagerness of the Bank to match the currency composition of its assets with that of its (customer) liabilities. Note that in contrast to the findings of aggregate studies (e.g. Luca and Petrova 2008), the positive correlation between foreign currency customer funding and foreign currency lending observed above cannot be driven by reverse causality. We examine the probability of the Bank to grant loans in foreign currency, which were requested in local currency. Thus, by construction we are examining a sample of loans in which there is no confounding demand for foreign currency.<sup>21</sup> The panel estimates reported for repeat clients in column (4) also rule out that the observed correlation between customer funding and loan currency switching is driven by unobserved heterogeneity of clients applying for loans at different times during our observation period.

However, the observed correlation between customer funding and the switching of loan currency may be driven by omitted economic developments. As depicted in Figure 3 there is a steady increase in the foreign currency customer funding of our Bank, while the share of loans switched from local to foreign currency experiences a sharp increase in 2006 and 2007. Thus, the observed correlation between EUR customer funding and currency switching by the

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<sup>21</sup> In unreported robustness tests we replicate the model presented in column (1) of Table 6 with *EUR requested* as the dependent variable. The results of that robustness test suggest that the demand for foreign currency loans by firms in our sample is unrelated to the funding structure of the Bank in any case.

Bank in Table 6 may be driven by unobserved changes in economic conditions in 2006 and 2007. In particular, the negotiations over Bulgaria's accession to the European Union (which were finalized in October 2006) may have spurred foreign currency lending by our Bank. In the following section we examine the impact of regulatory changes and capital market imperfections which are exogenous to the Bank's lending activities in order to further identify supply-side drivers of loan currency choice.

### **3.3 Securitization and loan currency choice**

Bulgaria, like many other Central and Eastern European transition countries, experienced a massive credit boom starting in the early 2000s.<sup>22</sup> In the beginning of 2005, the Bulgarian National Bank (BNB) decided to take macroprudential regulatory steps to slow credit growth because of the fear that the credit boom could threaten the stability of the banking system and exacerbate macroeconomic volatility. Increased reserve requirements were introduced in April 2005 to penalize banks whose lending portfolio expansions exceeded certain thresholds (BNB 2005). To circumvent these increased reserve requirements, several banks sold loans off their balance sheets (e.g. to their foreign parent banks) or securitized part of their loan portfolio.

The Bank in our sample securitized a substantial share of its loan portfolio starting from April 2006. In the following set of exercises we exploit the differential ability of the Bank to securitize EUR and BGN loans to identify the supply-side drivers of loan currency choice. Importantly, while the securitization arrangement of our Bank itself may be endogenous,

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<sup>22</sup> Part of this increase may be attributed to a catching-up process to EU levels and a financial deepening consistent with economic fundamentals (e.g. Cottarelli, Dell'Ariccia and Vladkova-Hollar 2003, Faure 2007).

capital market imperfections imply that securitization is only possible for loans denominated in EUR. Moreover, the securitization arrangement of our Bank also specified that loans with amounts above 350,000 EUR or maturities longer than 7 years were not eligible for securitization. Thus securitization can be seen as an exogenous supply-side driver of foreign currency lending at least for loans of eligible size and maturity.

Figure 4 provides first suggestive evidence that the securitization of foreign currency loans from 2006 onwards did lead to a strong supply effect. The share of loans which were switched by the Bank to EUR (when the firm requested BGN) increased considerably after the securitization arrangement started in the second quarter of 2006. By contrast the share of loans requested in EUR by borrowers decreased steadily during 2006 and 2007.<sup>23</sup> Note that the introduction of macroprudential regulations *per se* in 2005:Q2 had no corresponding effect on loan currency supply. In the following we will treat this change in regulation as a placebo test to check the robustness of our findings.

[Insert Figure 4 here]

Table 7 examines the impact of securitization on the probability that the Bank switches loans requested in local currency to foreign currency. To rule out that the effects of the securitization are confounded with the effects of economic and political developments, we compare the impact of the securitization on the currency of loans which were eligible and non-eligible for securitization.<sup>24</sup> In Table 7 we define eligibility based on both the requested

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<sup>23</sup> Throughout this section we focus on the subsample of loans with loan amounts exceeding 10,000 EUR.

<sup>24</sup> As mentioned above, during 2006 the negotiations over accession by Bulgaria to the European Union were completed. The anticipation of EU accession per January 1<sup>st</sup>, 2007, may have reduced the perceived risk

and granted loan terms. We thus compare loans for which (ex-ante) the bank had to change only the loan currency to make them eligible for securitization to loans for which even a change in the currency would not have been sufficient (ex-post) to make them eligible for securitization.

Panel A examines the sample of loans requested in local currency during the three quarters before and after the start of the securitization arrangement. The column (1) results show that for the group of eligible loans the likelihood that the Bank switches a loan from BGN to EUR increases by 3 percentage points after the start of the securitization deal. By contrast, column 2 shows that for non-eligible loans the switching likelihood actually decreases (albeit not significantly) after the start of the securitization deal. The significant difference-in-difference estimate confirms that the change in the switching likelihood is 15 percentage points higher for the eligible than for the non-eligible loans. Panel B confirms these findings studying the six quarters before and after the start of the securitization arrangement.

The analysis in Table 7, Panel C provides a placebo test focusing on the three quarters before and after the introduction of the macroprudential regulations. Since these regulations introduced increased reserve requirements for all loans independent of their currency, we do not expect to find any effect on the likelihood to switch the loan currency from BGN to EUR due to this event. The results in Panel C indeed show that the introduction of the macroprudential regulations did not lead to any increase in the switching likelihood, neither for loans eligible nor non-eligible for securitization. These results lend further credibility to the securitization arrangement being an exogenous driver of currency switching.

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associated with foreign currency loans. If many first-time borrowers during this period underestimated their eligibility for foreign currency loans, we would also observe an increase in switching of loans from local to foreign currency, independent of securitization.

[Insert Table 7 here]

The results in Table 7 suggest that – for those loans which only need a currency switch to make them eligible for securitization – the Bank is indeed more likely to switch the currency. If this is the case, then we would also expect that the Bank undertakes a simultaneous adaption of loan currency, loan amount and loan maturity for those loans which are otherwise not eligible for securitization. To be precise, we should see that after the beginning of the securitization deal the Bank is more likely to reduce the amount and maturity of loans so that they adhere to the thresholds of 350,000 EUR and 7 years respectively. In addition, we expect that if the Bank reduces the maturity or amount of a loan below these thresholds, then the Bank should also be more likely to switch the currency to EUR.

Table 8 displays our analysis of the simultaneous adaptation of loan currency, loan amount and loan maturity by the Bank in order to make loans eligible for securitization. In this table we focus on those loans which were requested in local currency, and which also exceed the eligibility thresholds for securitization with respect to requested loan amount ( $>$  EUR 350,000) or requested loan maturity ( $>$  7 years). The table first reports the share of these loans for which the Bank adapted the loan amount and/or loan maturity so that both eligibility criteria are met. The table then reports the share of loan currency switches for those loans which are eligible based on granted loan amount and granted loan maturity versus those loans which are not eligible. As in Table 7 we report findings for event windows of  $\pm$  3 quarters (Panel A) and  $\pm$  6 quarters (Panel B) around the beginning of the securitization deal as well as a placebo test based on an event window of  $\pm$  3 quarters around the beginning of the macroprudential regulations (Panel C).



The results displayed in Table 8 show that the Bank was much more likely to adapt the loan amount and/or maturity of loans to make them eligible for securitization after the beginning of the securitization deal. The Panel A results show that the likelihood of a reduction of the loan amount and/or loan maturity below the eligibility thresholds increases by 23 percentage points in the 3 quarters after the deal began compared to the three quarters prior to the deal. This finding is confirmed in Panel B for a wider event window, but is not found in the placebo test in Panel C.

The Table 8 results provide strong evidence for a simultaneous adaptation of loan currency with loan amount and maturity to meet the eligibility criteria for securitization. The Panel A results show that among the loans which experience a reduction in loan amount and/or maturity below the eligibility thresholds the frequency of currency switches increases by 29 percentage points after the beginning of the securitization deal. By contrast among those loans which are not made eligible in terms of amount and maturity the frequency of currency switches drops by (an insignificant) 12 percentage points. The difference-in-difference effect thus suggests that securitization leads to a 41 percentage higher increase in currency switches for loans which were simultaneously made eligible in terms of amount and/or maturity. Again these findings are confirmed in Panel B for a broader event window, but not confirmed in the placebo test in Panel C.

In Table 9 we provide a multivariate analysis of the impact of the securitization arrangement on the Bank's propensity to switch loan currency. Replicating model (2) from Table 5 we include (but do not report) a full set of firm-level and loan-level explanatory variables as well as industry and branch fixed effects. In addition we include the dummy variables *Securitization* (1=loan was disbursed after April 1<sup>st</sup> 2006, 0= loan disbursed prior to April 1<sup>st</sup> 2006) and *Eligible* and the interaction term between the two. Our main interest lies

in the interaction term *Securitization\*Eligible*: If this interaction term is significantly positive, it identifies the securitization arrangement as a supply-side driver of foreign currency lending. In Panel A we restrict our analysis (as in Table 7) to loans that are eligible vs. not eligible for securitization based on requested and granted loan amount and maturity. In Panel B we consider only loans which are not eligible based on requested loan amount and/or maturity.

[Insert Table 9 here]

The results presented in Table 9 confirm that the securitization arrangement of the Bank induced more switching of loans from local to foreign currency. In Panel A, the estimated coefficients of the interaction terms *Securitization\*Eligible* in columns (1-2) confirm that after the securitization deal commenced the likelihood of a loan currency switch from BGN to EUR for eligible loans increased by 14 to 15 percentage points more than for non-eligible loans. Confirming our univariate results, columns (1-2) in Panel B show that for those loans that are not eligible based on their requested loan amount and/or maturity the differential increase in the likelihood of a currency switch from BGN to EUR (between 40 and 43 percentage points) after the start of the securitization arrangement is considerably larger.

In columns (3-6) of Panel A and B we replicate our analysis in column (1) for two different sample splits: mortgage vs. non-mortgage loans and sole proprietorships vs. non-sole proprietorships. We conduct these sample splits in order to assess whether the additional foreign currency loans extended by the Bank after the commencement of the securitization arrangement exposed the Bank to more credit risk. In both Panel A and B the subsample estimates in columns (3-6) suggest that the Bank is more likely to switch clients from local

currency to foreign currency if they imply lower credit risk: Comparing the coefficients for the interaction terms *Securitization\*Eligible* in columns (5-6) of Panel A and Panel B shows that the impact on sole proprietorships is much lower than on non-sole proprietorships. When comparing the impact of the securitization deal on currency switching for mortgage loans vs. non-mortgage loans in Panel A we find that the effect is much stronger for mortgage loans.<sup>25</sup> Overall our findings suggest that while the securitization arrangement did lead the Bank to push more clients to foreign currency loans, there is no evidence that this is associated with laxer lending standards.

## 4 Conclusions

In this paper we examine the currency denomination of loans extended to small firms by one retail bank in Bulgaria. Our analysis is based on credit file data for 99,490 loans to 57,464 firms over the period 2003-2007. In contrast to existing studies, we observe not only the actual currency denomination of the loan extended, but also the loan currency that was requested by the firms in their loan application. We are therefore able to study to what extent the currency denomination is driven by supply-side factors such as foreign currency funding and securitization. Our results suggest that foreign currency borrowing in Eastern Europe is at least partly supply-driven, with the bank hesitant to lend long-term in local currency and eager to match the currency structure of its assets and liabilities and to make use of securitization activities.

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<sup>25</sup> We are unable to retrieve difference-in-difference estimates for the non-mortgage loans because there are no non-eligible loans in the period before the start of the securitization arrangement in this subsample.

Our results have implications for policy makers throughout Eastern Europe who have recently taken measures to discourage foreign currency borrowing in the retail sector (Rosenberg and Tirpak 2009). In Hungary, Poland and Latvia, for example, banks are now forced to disclose the exchange rate risks involved in foreign currency borrowing and have had to tighten eligibility criteria for such loans. In Romania and Croatia, on the other hand, supervisory authorities have imposed stronger provisioning requirements on foreign currency compared to local currency loans. As we find that foreign currency borrowing in Emerging Europe seems to a non-negligible part be driven by supply factors, measures that address only the demand side may not be enough to curb foreign currency borrowing.

Our results suggest that wholesale foreign currency funding of banks in Eastern Europe may not be the key driver of foreign currency lending in the region. By contrast we find that foreign currency retail deposits have a strong impact on foreign currency lending. This finding is in line with the cross-country evidence provided by Brown and De Haas (2012) and suggests that recent proposals to foster local currency wholesale funding in Eastern Europe may not be sufficient to reduce foreign currency lending.<sup>26</sup> Instead, credible macroeconomic policies which encourage customers to save in local currency may be more promising. A credible macroeconomic environment would also make banks less hesitant to extend large and long-term loans in local currency.

Finally, we document that the securitization activities of the bank from 2006 onwards did lead to a supply effect on loan terms. The share of loans eligible for securitization which were switched by the bank to foreign currency increased considerably while no such effect is observed for non-eligible loans. However, our results provide no conclusive evidence that the

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<sup>26</sup> The President of the EBRD, Thomas Mirow, highlighted this proposal in a Speech on May 13 at the 2010 Joint Conference of the IIF and EBRD on Financial Systems in Emerging Europe in Zagreb.

increase in foreign currency lending induced by securitization also led the bank to take on increased credit risk.

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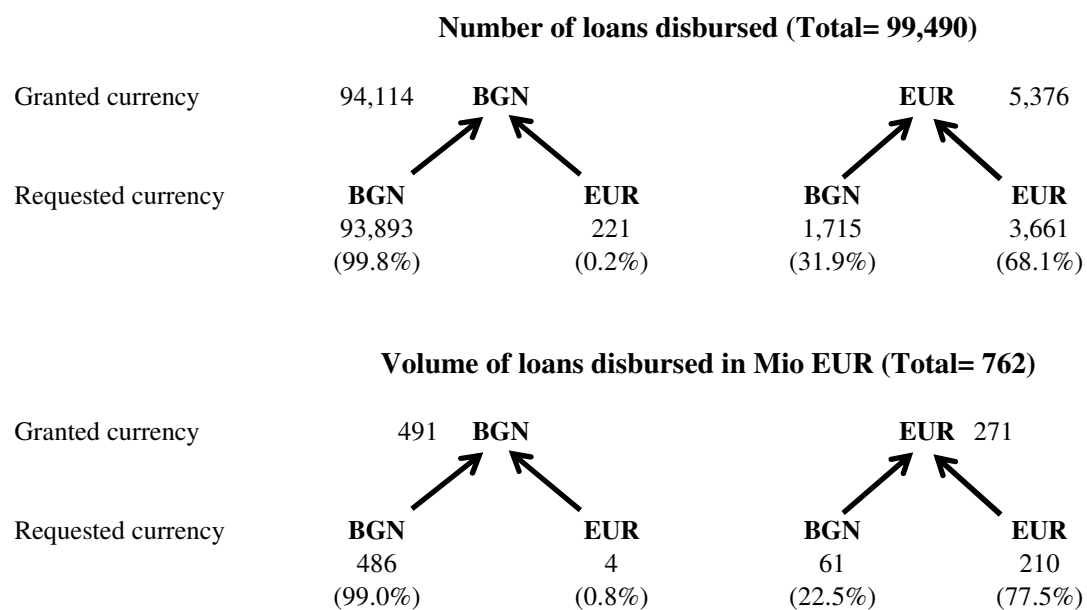
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**Figure 1. Requested vs. granted loan currency**

Note: This figure displays the share of requested and granted loan currencies in number of loans and volume of loans disbursed.

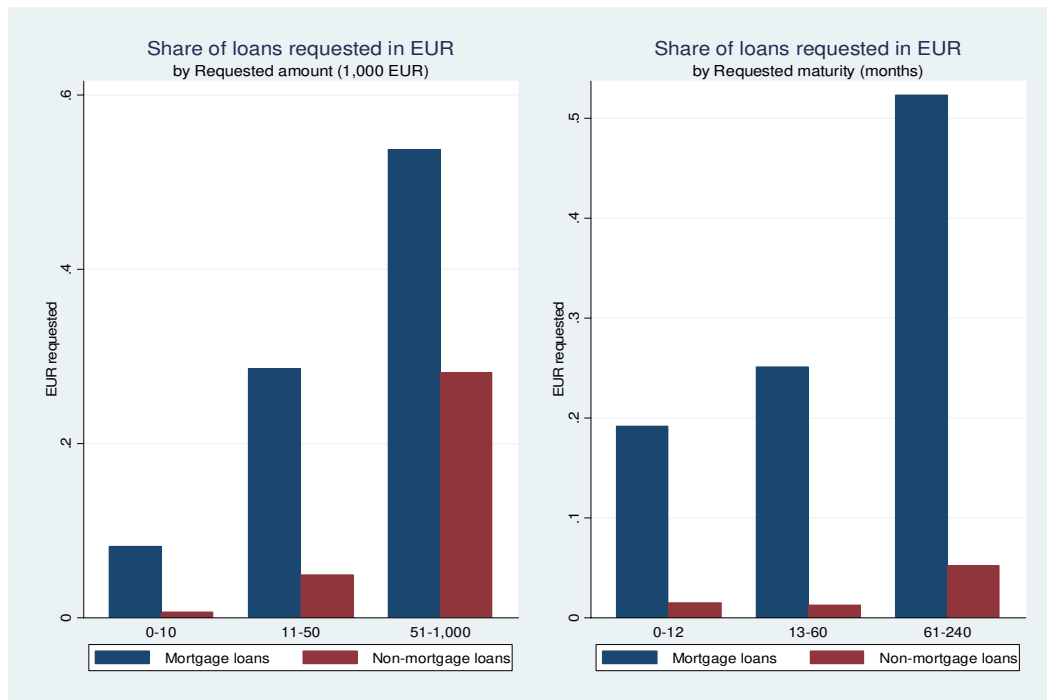


Figure 2A. Share of loans requested in EUR

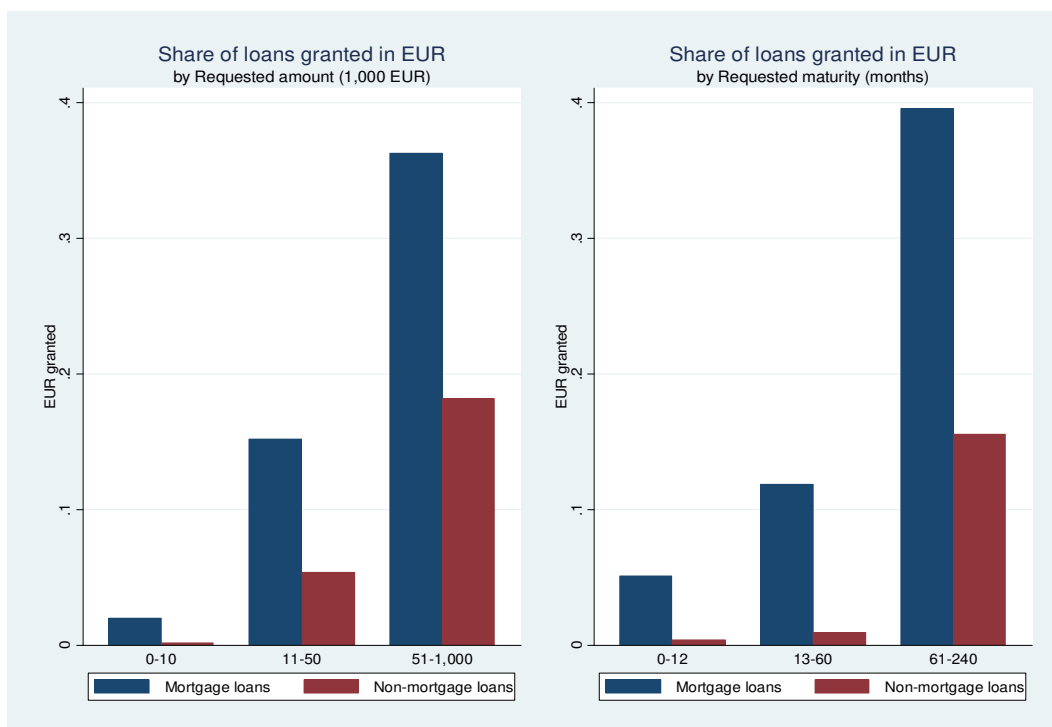
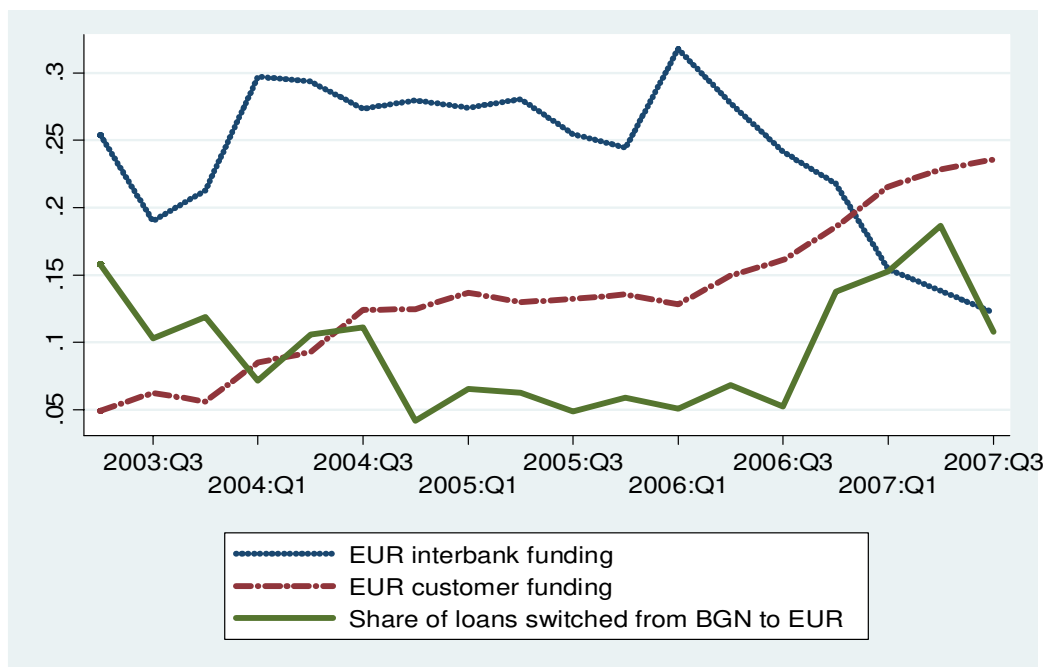


Figure 2B. Probability of being granted EUR after having requested BGN

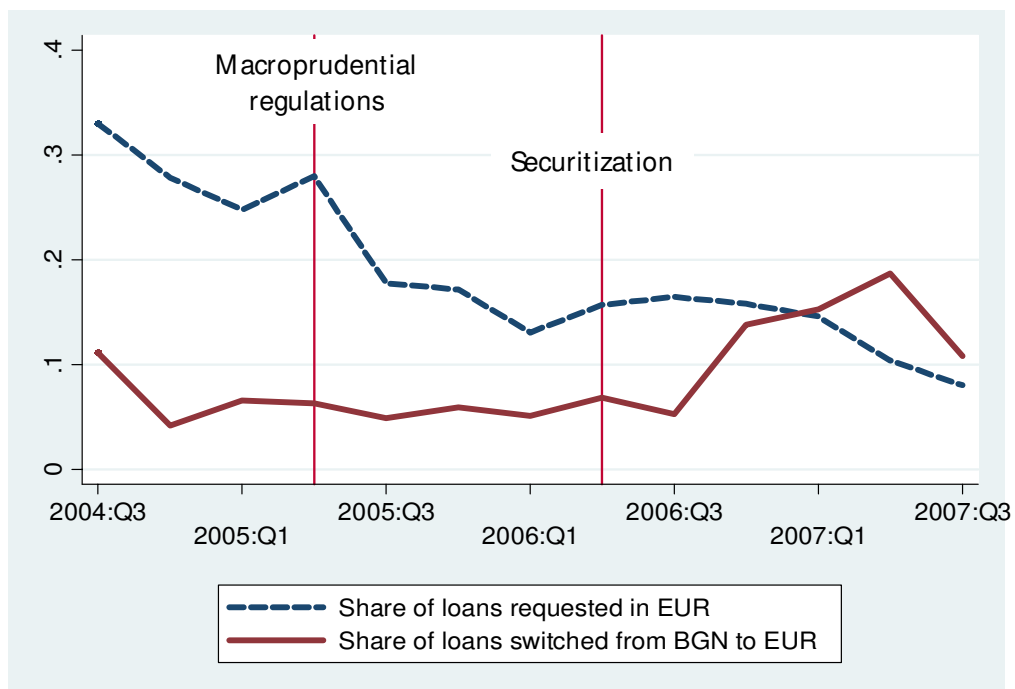
## Figure 2. Requested and granted currency by loan size and maturity

Notes: This figure displays the share of *Mortgage loans* and *Non-mortgage loans*, respectively, that is requested in EUR (Figure 2A) and that is granted in EUR after being requested in BGN (Figure 2B) by requested loan size and loan maturity.



**Figure 3. EUR funding and loan currency switches by quarter**

Notes: Figure 3 displays the Bank's funding denominated in EUR (*EUR interbank funding*, *EUR customer funding*) as well as the share of loans that were requested in BGN and granted in EUR for the subsample of loans with amounts > 10,000 EUR by quarter.



**Figure 4. Loans requested in EUR and switched loans over time**

Notes: This figure displays the quarterly average share of loans which was requested in EUR and the quarterly average share of loans that were requested in BGN and granted in EUR for the subsample of loans with amounts > 10,000 EUR starting in 2004:Q3. The vertical lines indicate the introduction of macroprudential regulations (beginning of 2005:Q2) and the start of the securitization deal (beginning of 2006:Q2).

**Table 1. Variable definitions and data sources**

Variable	Definition	Unit	Source
<i>Dependent variables</i>			
EUR requested	Firm requested EUR loan (1=yes, 0=no)	1/0	Bank
EUR granted	Bank granted EUR loan (1=yes, 0=no)	1/0	Bank
<i>Firm characteristics (at loan disbursement date)</i>			
EUR savings account	Firm holds EUR savings or term account (1=yes, 0=no)	1/0	Bank
Disposable income	Total disposable income per month	log EUR	Bank
Leverage	Total debt as share of total assets of firm	%	Bank
Sole proprietorship	Firm is sole proprietorship (1=yes, 0=no)	1/0	Bank
Loan number	The number of a loan in the sequence of loans a borrower takes out (1 to 9)	integer 1-9	Bank
Assets	Total assets of firm	log EUR	Bank
Age	Firm age	log years	Bank
Industry	Industry dummies which equal one if firm belongs to one of the following sectors: Construction, Manufacturing, Trade, Transport, Tourism, Other services. Baseline industry is Agriculture	1/0	Bank
<i>Loan characteristics</i>			
Requested amount	Requested loan amount	log EUR	Bank
Amount/Requested amount	Ratio of granted loan amount to requested loan amount	ratio	Bank
Requested maturity	Requested loan maturity	log months	Bank
Maturity/Requested maturity	Ratio of granted loan maturity to requested loan maturity	ratio	Bank
Mortgage loan	Loan is a mortgage loan (1=yes, 0=no)	1/0	Bank
Branch	Branch dummies which equal one for the branch in which the loan was granted	1/0	Bank
Eligible (Granted and requested)	Loan is eligible for securitization based on its requested and granted amount (both up to 350,000 EUR) and its requested and granted maturity (both up to 7 years)	1/0	Bank
Eligible (Granted, not requested)	Loan is eligible for securitization based on its granted amount (up to 350,000 EUR) and granted maturity (up to 7 years) but not based on its requested amount and/or maturity	1/0	Bank
<i>Bank funding (at end of month prior to loan disbursement)</i>			
EUR interbank funding	EUR interbank funding (credit lines) as share of the bank's total liabilities	%	Bank
EUR customer funding	EUR customer funding (deposits) as share of the bank's total liabilities	%	Bank
<i>Macroeconomic conditions (in month or quarter of loan disbursement)</i>			
Spread differential	Intermediation spread (short-term lending rate minus household deposit rate) in EUR minus spread in BGN	%	BNB
Inflation volatility	Variance of monthly changes in the consumer price index over 12 months prior to beginning of the quarter in which the loan is disbursed	%	IFS
Interest differential	Quarterly average of the interbank lending rate (for maturities over 30 days) in BGN minus interbank lending rate (for maturities over 30 days) in EUR	%	BNB
Forward term spread	2-year forward rate BGN to EUR minus 3-month forward rate BGN to EUR (available from June 2004 onwards)	1/100 BGN per EUR	Bloomberg



**Table 2. Descriptive statistics**

	N	Mean	Std. Dev.	Minimum	Maximum
<i>Dependent variables</i>					
EUR requested	99,490	0.04	0.19	0	1
EUR granted	99,490	0.05	0.23	0	1
<i>Firm characteristics</i>					
EUR savings account	99,490	0.01	0.09	0	1
Disposable income	99,490	842	5,906	0	1,154,455
Leverage	99,490	0.15	0.19	0	1
Sole proprietorship	99,490	0.90	0.30	0	1
Loan number	99,490	1.91	1.30	1	9
Assets	99,490	55,929	203,899	2	12,835,983
Age	99,490	8.48	5.48	0	107
<i>Loan characteristics</i>					
Requested amount	99,490	8,149	24,266	61	1,000,000
Amount/Requested amount	99,490	0.95	0.18	0.50	2
Requested maturity	99,490	31	20	1	240
Maturity/Requested maturity	99,490	0.97	0.70	0.02	60
Mortgage loan	99,490	0.09	0.29	0	1
<i>Bank funding</i>					
EUR interbank funding	54	0.24	0.06	0.12	0.33
EUR customer funding	54	0.13	0.05	0.04	0.24
<i>Macroeconomic conditions</i>					
Spread differential	54	-0.36	0.95	-2.40	2.08
Inflation volatility	54	0.98	0.35	0.45	1.71
Interest differential	54	1.32	0.62	0.48	2.40
Forward term spread	40	1.86	1.36	0.09	4.67

Notes: This table reports summary statistics for all variables. See Table 1 for definitions and sources of the variables. For all log-transformed variables the statistics are calculated by using the original values.

**Table 3. Loan disbursements**

## Panel A. Number of loans disbursed

Year	Full sample	Amount > 10,000 EUR	Amount > 50,000 EUR	Mortgage loans	Repeat clients
2003	10,383	1,235	202	1,649	7,300
2004	17,859	2,137	353	2,534	13,750
2005	22,282	3,872	503	2,220	17,060
2006	26,376	5,028	521	2,036	17,427
2007	22,590	5,388	422	,976	10,108
Total	99,490	17,660	2,001	9,415	65,645

## Panel B. Volume of loans disbursed (in million EUR)

Year	Full sample	Amount > 10,000 EUR	Amount > 50,000 EUR	Mortgage loans	Repeat clients
2003	66	45	24	37	47
2004	119	78	43	69	93
2005	180	121	62	90	137
2006	205	131	60	89	147
2007	192	133	49	57	102
Total	762	509	238	343	525

## Panel C. Share of loan volume disbursed in EUR (%)

Year	Full sample	Amount > 10,000 EUR	Amount > 50,000 EUR	Mortgage loans	Repeat clients
2003	43.7	61.9	78.2	59.4	44.4
2004	42.2	61.7	79.4	62.9	41.7
2005	37.0	53.9	76.3	65.4	36.0
2006	32.1	49.4	73.9	66.6	34.6
2007	31.2	44.1	68.6	73.4	38.8
Total	35.6	52.1	74.9	65.9	37.9

Notes: This table displays statistics on the Bank's loan portfolio. Results are provided for the full sample and the following subsamples: Loans with an *Amount > 10,000 EUR*; Loans with an *Amount > 50,000 EUR*; *Mortgage loans*: Loans with the purpose to finance real estate; *Repeat clients*: Loans disbursed to firms that take out more than one loan from the Bank during the observation period.

**Table 4. Foreign currency loan demand**

	(1)	(2)	(3)	(4)	(5)	(6)
		Amount > 10,000 EUR	Amount > 50,000 EUR	Non-mortgage loans (Amount > 10,000 EUR)	Mortgage loans (Amount > 10,000 EUR)	Repeat clients (Amount > 10,000 EUR)
Sample:	Full sample					
Dependent variable:			<i>EUR requested</i>			
EUR savings account	0.035*** [0.009]	0.120*** [0.029]	0.070 [0.083]	0.037 [0.031]	0.215*** [0.048]	0.090*** [0.034]
Disposable income	-0.004*** [0.001]	-0.020*** [0.003]	-0.066*** [0.012]	-0.010*** [0.002]	-0.035*** [0.006]	-0.022*** [0.004]
Leverage	-0.008** [0.003]	-0.029** [0.012]	-0.047 [0.049]	-0.029*** [0.011]	-0.058* [0.034]	-0.008 [0.018]
Sole proprietorship	-0.009*** [0.001]	-0.026*** [0.005]	0.038 [0.029]	-0.033*** [0.005]	-0.013 [0.011]	-0.045*** [0.008]
Loan number	0.001*** [0.000]	0.008*** [0.002]	-0.001 [0.005]	0.004*** [0.001]	0.014*** [0.004]	0.005** [0.002]
Assets	0.010*** [0.001]	0.036*** [0.004]	0.060*** [0.011]	0.025*** [0.003]	0.050*** [0.008]	0.044*** [0.004]
Age	0.001 [0.001]	0.002 [0.004]	-0.042* [0.022]	0.008 [0.005]	-0.013 [0.010]	0.009 [0.007]
Requested amount	0.023*** [0.001]	0.097*** [0.004]	0.200*** [0.019]	0.062*** [0.006]	0.154*** [0.008]	0.095*** [0.005]
Requested maturity	0.011*** [0.001]	0.053*** [0.005]	0.134*** [0.014]	0.021*** [0.006]	0.100*** [0.011]	0.061*** [0.005]
Mortgage loan	0.031*** [0.003]	0.095*** [0.010]	0.090 [0.059]			0.101*** [0.010]
Observations	99,100	17,593	1,995	10,207	6,771	11,470
Mean of dependent variable	0.04	0.18	0.54	0.07	0.36	0.21
Estimation method	Logit	Logit	Logit	Logit	Logit	Logit
R <sup>2</sup> (pseudo)	0.466	0.325	0.195	0.271	0.203	
Wald Chi <sup>2</sup> -statistic						1,094.97***
Industry fixed effects	yes	yes	yes	yes	yes	yes
Branch fixed effects	yes	yes	yes	yes	yes	yes
Year-Quarter fixed effects	yes	yes	yes	yes	yes	yes
Firm random effects	no	no	no	no	no	yes

Notes: This table reports average marginal effects for firm and loan characteristics from logit estimations. The dependent variable *EUR requested* equals one if the firm requested a EUR loan and equals zero otherwise, while all explanatory variables are defined in Table 1. Standard errors are reported in brackets and account for clustering at the industry-branch level. \*\*\*, \*\*, \* denote significance at the 0.01, 0.05 and 0.10-level.

**Table 5. Foreign currency loan supply: Switching loans from BGN to EUR**

	(1)	(2)	(3)	(4)	(5)	(6)
Sample:	Full sample	Amount > 10,000 EUR	Amount > 50,000 EUR	Non-mortgage loans (Amount > 10,000 EUR)	Mortgage loans (Amount > 10,000 EUR)	Repeat clients (Amount > 10,000 EUR)
Dependent variable:			<i>EUR granted</i>			
EUR savings account	0.017*** [0.007]	0.043 [0.030]	-0.020 [0.119]	0.021 [0.025]	0.080 [0.074]	-0.004 [0.022]
Disposable income	-0.000 [0.000]	-0.001 [0.002]	0.006 [0.017]	-0.001 [0.002]	0.000 [0.006]	-0.001 [0.003]
Leverage	-0.001 [0.002]	-0.016 [0.012]	-0.114* [0.067]	-0.025** [0.010]	-0.019 [0.034]	0.000 [0.013]
Sole proprietorship	-0.002** [0.001]	-0.011** [0.006]	-0.011 [0.029]	-0.012*** [0.005]	-0.002 [0.013]	-0.011* [0.006]
Loan number	-0.001** [0.000]	-0.003* [0.001]	-0.002 [0.006]	-0.003* [0.002]	-0.001 [0.004]	-0.001 [0.002]
Assets	0.003*** [0.001]	0.009*** [0.003]	0.008 [0.015]	0.008** [0.003]	0.012** [0.006]	0.015*** [0.003]
Age	-0.001 [0.001]	-0.007* [0.004]	-0.024 [0.031]	-0.002 [0.004]	-0.022* [0.011]	-0.011** [0.005]
Requested amount	0.017*** [0.001]	0.083*** [0.005]	0.088*** [0.024]	0.086*** [0.008]	0.098*** [0.013]	0.058*** [0.005]
Requested maturity	0.012*** [0.001]	0.067*** [0.004]	0.260*** [0.018]	0.044*** [0.005]	0.126*** [0.012]	0.065*** [0.005]
Mortgage loan	0.014*** [0.002]	0.065*** [0.011]	0.040 [0.039]			0.049*** [0.008]
Amount/Requested amount	0.034*** [0.002]	0.139*** [0.011]	0.308*** [0.038]	0.113*** [0.009]	0.206*** [0.021]	0.110*** [0.011]
Maturity/Requested maturity	0.002*** [0.000]	0.011*** [0.004]	0.076*** [0.016]	0.005** [0.002]	0.029*** [0.011]	0.016*** [0.002]
Observations	95,608	14,484	,914	10,034	4,330	9,088
Mean of dependent variable	0.02	0.10	0.28	0.06	0.19	0.09
Estimation method	Logit	Logit	Logit	Logit	Logit	Logit
R <sup>2</sup> (pseudo)	0.448	0.279	0.310	0.292	0.242	
Wald Chi <sup>2</sup> -statistic						417.77***
Industry fixed effects	yes	yes	yes	yes	yes	yes
Branch fixed effects	yes	yes	yes	yes	yes	yes
Quarter fixed effects	yes	yes	yes	yes	yes	yes
Firm random effects	no	no	no	no	no	yes

Notes: This table reports average marginal effects for firm and loan characteristics from logit estimations for the sample of loans requested in BGN only. The dependent variable *EUR granted* equals one if the firm received a EUR loan and equals zero otherwise, while all explanatory variables are defined in Table 1. Standard errors are reported in brackets and account for clustering at the industry-branch level. \*\*\*, \*\*, \* denote significance at the 0.01, 0.05 and 0.10-level.

**Table 6. Bank funding, monetary conditions and switching of loan currency**

	(1)	(2)	(3)	(4)
Sample:	All loans with amount > 10,000 EUR	Non-mortgage loans	Mortgage loans	Repeat clients
Dependent variable:		<i>EUR granted</i>		
EUR interbank funding	-0.142 [0.162]	0.002 [0.208]	-0.245 [0.354]	0.017 [0.141]
EUR customer funding	0.903*** [0.241]	0.785*** [0.268]	1.528*** [0.538]	0.887*** [0.227]
Spread differential	0.002 [0.003]	0.002 [0.003]	-0.008 [0.007]	0.000 [0.003]
Inflation volatility	0.019 [0.020]	-0.013 [0.023]	0.104*** [0.037]	0.041*** [0.012]
Interest differential	0.018** [0.009]	0.023** [0.010]	-0.001 [0.017]	0.005 [0.006]
Forward term spread	-0.014*** [0.004]	-0.022*** [0.007]	-0.010 [0.007]	-0.004 [0.003]
Observations	13,048	9,519	3,410	8,081
Mean of dependent variable	0.10	0.06	0.21	0.09
Estimation method	Logit	Logit	Logit	Logit
R <sup>2</sup> (pseudo/adjusted)	0.272	0.285	0.224	
Wald Chi <sup>2</sup> -statistic				325.82***
Firm and loan characteristics	yes	yes	yes	yes
Industry fixed effects	yes	yes	yes	yes
Branch fixed effect	yes	yes	yes	yes
Firm random effects	no	no	no	yes

Notes: This table reports average marginal effects from logit estimations for the sample of loans with amounts > 10,000 EUR that are requested in BGN. The sample period starts in June 2004 since forward rates are not available before. The dependent variable *EUR granted* equals one if the firm received a EUR loan and equals zero otherwise, while all explanatory variables are defined in Table 1. Standard errors are reported in brackets and account for clustering at the industry-branch level. \*\*\*, \*\*, \* denote significance at the 0.01, 0.05 and 0.10-level.

**Table 7. Securitization and loan currency switches: Univariate tests****Panel A. +/- 3 quarters around the start of securitization deal**

		Eligible		Difference (1) vs. (2)
		(1) yes N = 5,928	(2) no N = 178	
Securitization	<i>EUR granted if BGN requested</i>			
	yes (2006:Q2 - 2006:Q4) N = 3,246	0.08	0.20	-0.13***
	no (2005:Q3 - 2006:Q1) N = 2,991	0.04	0.33	-0.28***
Difference		0.03***	-0.12	<b>0.15***</b>

**Panel B. +/- 6 quarters around the start of securitization deal**

		Eligible		Difference (1) vs. (2)
		(1) yes N = 12,068	(2) no N = 280	
Securitization	<i>EUR granted if BGN requested</i>			
	yes (2006:Q2 - 2007:Q3) N = 8,045	0.11	0.25	-0.14***
	no (2004:Q4 - 2006:Q1) N = 4,545	0.05	0.33	-0.28***
Difference		0.07***	-0.08	<b>0.14***</b>

**Panel C. +/- 3 quarters around the introduction of macroprudential regulations**

		Eligible		Difference (1) vs. (2)
		(1) yes N = 3,729	(2) no N = 78	
Macroprudential regulations	<i>EUR granted if BGN requested</i>			
	yes (2005:Q1 - 2005:Q4) N = 2,408	0.04	0.33	-0.29***
	no (2004:Q3 - 2005:Q1) N = 1,426	0.06	0.33	-0.27***
Difference		-0.02***	0.00	<b>-0.02</b>

Notes: This table reports the average likelihood that a loan is granted in EUR after it was requested in BGN (*EUR granted if BGN requested*) for the following subsamples: Column (1): loans that are *Eligible* for the Bank's securitization deal based on requested and granted loan terms (i.e. requested and granted amount up to 350,000 EUR and requested and granted maturity up to 7 years); column (2): loans that are *not eligible* for securitization based on requested and granted loan amount and maturity. Panel A includes all loans disbursed in an event window of +/- 3 quarters around the start of the securitization deal. Panel B includes all loans disbursed in an event window of +/- 6 quarters around the start of the securitization deal. Panel C includes all loans disbursed in an event window of +/- 3 quarters around the introduction of macroprudential regulations. The Bank started securitizing loans in April 2006 and continued to do this until the end of our observation period. Macroprudential regulations were introduced in April 2005 and lifted in December 2006. The table also provides T-tests for differences between groups and F-tests for differences between pairs of groups. \*\*\*, \*\*, \* denote significance at the 0.01-, 0.05- and 0.1-level.

**Table 8. Securitization and simultaneous changes in loan terms**

## Panel A. +/- 3 quarters around the start of securitization deal

		(1)	(2)	(3)	Difference (2) vs. (3)
			EUR granted		
		Share of loans with granted amount and loan maturity below thresholds	Granted loan amount and loan maturity below thresholds N = 131	Granted loan amount and/or loan maturity not below thresholds N = 178	
Securitization	<i>EUR granted if BGN requested</i> yes (2006:Q2 - 2006:Q4) N = 3,246	0.51	0.45	0.20	0.25***
	no (2005:Q3 - 2006:Q1) N = 2,991	0.28	0.16	0.33	-0.16*
	Difference	0.23***	0.29***	-0.12	<b>0.41***</b>

## Panel B. +/- 6 quarters around the start of securitization deal

		(1)	(2)	(3)	
			EUR granted		
<i>EUR granted if BGN requested</i>		Share of loans with granted amount and loan maturity below thresholds	Granted loan amount / loan maturity below thresholds N = 252	Granted loan amount and/or loan maturity not below thresholds N = 280	Difference (2) vs. (3)
Securitization	yes (2006:Q2 - 2007:Q3) N = 8,045	0.53	0.51	0.25	0.25***
	no (2004:Q4 - 2006:Q1) N = 4,545	0.33	0.26	0.33	-0.07
	Difference	0.19***	0.25***	-0.08	<b>0.33***</b>

## Panel C. +/- 3 quarters around the introduction of macroprudential regulations

		(1)	(2)	(3)	
			EUR granted		
		Share of loans with granted amount and loan maturity below thresholds	Granted loan amount and loan maturity below thresholds N = 37	Granted loan amount and/or loan maturity not below thresholds N = 78	Difference (2) vs. (3)
<i>EUR granted if BGN requested</i>					
Macroprudential regulations	yes (2005:Q2 - 2005:Q4) N = 2,408	0.32	0.26	0.33	-0.07
	no (2004:Q3 - 2005:Q1) N = 1,426	0.33	0.67	0.33	0.33
	Difference	-0.01	-0.40	0.00	<b>-0.40</b>

Notes: This table reports results for loans requested in BGN which are not eligible for securitization based on their *Requested amount* (>350,000 EUR) and / or *Requested maturity* (> 7 years). The table reports in column (1) the share of these loans for which the granted loan *Amount* and *Maturity* adhered to the securitization criteria (granted amount up to 350,000 EUR and granted maturity up to 7 years). In column (2) the table reports the likelihood that a loan is granted in EUR for loans that are *eligible* for the securitization deal based on granted amount and maturity. In column (3) the table reports the likelihood that a loan is granted in EUR for loans that are not eligible for the securitization deal based on granted amount and maturity. Panel A includes all loans disbursed in an event window of +/- 3 quarters around the start of the securitization deal. Panel B includes all loans disbursed in an event window of +/- 6 quarters around the start of the securitization deal. Panel C includes all loans disbursed in an event window of +/- 3 quarters around the introduction of macroprudential regulations. The Bank started securitizing loans in April 2006 and continued to do this until the end of our observation period. Macroprudential regulations were introduced in April 2005 and lifted in December 2006. The table also provides T-tests for differences between groups and F-tests for differences between pairs of groups. \*\*\*, \*\*, \* denote significance at the 0.01-, 0.05- and 0.1-level.

**Table 9. Securitization and loan currency switches: Multivariate analysis**

Panel A. Loans eligible or not eligible for securitization based on requested and granted amount and maturity

	(1)	(2)	(3)	(4)	(5)	(6)
Sample:			Non-mortgage loans	Mortgage loans	Sole proprietorships	Non-sole proprietorships
Number of quarters before / after securitization starts:	+/- 3 Quarters	+/- 6 Quarters	+/- 3 Quarters	+/- 3 Quarters	+/- 3 Quarters	+/- 3 Quarters
Dependent variable:						
Securitization	-0.101 [0.066]	-0.072 [0.072]	0.018*** [0.004]	-0.110* [0.063]	-0.032 [0.081]	-0.266** [0.121]
Eligible	-0.065 [0.060]	-0.067 [0.063]	0.190*** [0.030]	-0.014 [0.066]	0.002 [0.080]	-0.192** [0.088]
Securitization*Eligible	0.137** [0.068]	0.147** [0.072]		0.203*** [0.072]	0.057 [0.083]	0.331*** [0.119]
Observations	6,106	12,348	4,481	1,625	4,390	1,716
Mean of dependent variable	0.07	0.09	0.02	0.19	0.05	0.12
Estimation method	OLS	OLS	OLS	OLS	OLS	OLS
R <sup>2</sup> (adjusted)	0.194	0.164	0.086	0.169	0.210	0.182
Firm and loan characteristics	yes	yes	yes	yes	yes	yes
Industry fixed effects	yes	yes	yes	yes	yes	yes
Branch fixed effects	yes	yes	yes	yes	yes	yes

Panel B. Loans not eligible for securitization based on requested amount or requested maturity

	(1)	(2)	(3)	(4)	(5)	(6)
Sample:			Non-mortgage loans	Mortgage loans	Sole proprietorships	Non-sole proprietorships
Number of quarters before / after securitization starts:	+/- 3 Quarters	+/- 6 Quarters	+/- 3 Quarters	+/- 3 Quarters	+/- 3 Quarters	+/- 3 Quarters
Dependent variable:						
Securitization	-0.135* [0.071]	-0.124 [0.075]		-0.137* [0.071]	-0.051 [0.093]	-0.604** [0.263]
Eligible	-0.023 [0.116]	0.081 [0.104]		-0.059 [0.120]	0.017 [0.186]	-0.151 [0.408]
Securitization*Eligible	0.427*** [0.093]	0.402*** [0.092]		0.451*** [0.100]	0.283** [0.135]	1.032*** [0.362]
Observations	309	532	17	292	235	74
Mean of dependent variable	0.31	0.36		0.33	0.25	0.50
Estimation method	OLS	OLS	OLS	OLS	OLS	OLS
R <sup>2</sup> (adjusted)	0.225	0.242		0.224	0.162	0.071
Firm and loan characteristics	yes	yes	yes	yes	yes	yes
Industry fixed effects	yes	yes	yes	yes	yes	yes
Branch fixed effects	yes	yes	yes	yes	yes	yes

Notes: This table reports coefficients from OLS estimations for the sample of loans requested in BGN and with amounts > 10,000 EUR for the periods of three (column 1 and 3-6) and six (column 2) quarters, respectively, before and after the Bank started securitizing loans in April 2006. Panel A includes loans that are *Eligible* vs. *Non-eligible* for securitization based on the requested and granted amount (up to 350,000 EUR) and the requested and granted maturity (up to 7 years). Panel B includes only loans which are not eligible based on requested amount (> 350,000 EUR) or requested maturity (> 7 years). The dependent variable *EUR granted* equals one if the firm received a EUR loan and equals zero otherwise, while all explanatory variables are defined in Table 1. Standard errors are reported in brackets and account for clustering at the industry-branch level. \*\*\*, \*\*, \* denote significance at the 0.01, 0.05 and 0.10-level.